

WHAT IS CLAIMED IS:

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1. An apparatus for providing substantially intimate rolling contact between a portion of a donor sheet and a portion of an acceptor element in a laser-induced thermal transfer printer comprising a laser imaging head, the apparatus comprising:

a rotatably mounted cylindrical drum;

an acceptor element affixed to and supported by the cylindrical drum;

a rotatably mounted dispensing roller for dispensing a donor sheet;

a rotatably mounted receiving roller for receiving the donor sheet, the donor sheet being extended between the dispensing roller and the receiving roller; and

a plurality of rotatably mounted contact rollers configured to bring a portion of the donor sheet extended between the dispensing roller and the receiving roller into contact with a portion of the acceptor element, wherein the laser imaging head does not contact the donor sheet and does not contact the acceptor element.

2. The apparatus of claim 1, wherein the acceptor element is affixed to the external surface of the cylindrical drum.

3. The apparatus of claim 2, wherein the plurality of contact rollers comprises a first contact roller in contact with the cylindrical drum and a second contact roller in contact with the cylindrical drum, wherein the portion of the donor sheet brought into contact with the portion of the acceptor element is the portion of the donor sheet located between the first contact roller and second contact roller.

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4. The apparatus of claim 3, wherein the first contact roller is located proximate to the dispensing roller and the second contact roller is located proximate to the receiving roller.

5. The apparatus of claim 3, wherein the cylindrical drum, dispensing roller, receiving roller and contact rollers rotate in a synchronous manner.

6. The apparatus of claim 3, wherein the laser-induced thermal transfer printer comprises a laser imaging head for providing scanning laser energy to transfer material from the donor sheet to the acceptor element to form a representation of an image on the acceptor element, and wherein the portion of the donor sheet brought into contact with the portion of the acceptor element is the portion of the donor sheet located proximate to the laser imaging head.

7. The apparatus of claim 1, wherein the donor sheet comprises a transfer layer comprising a photothermal converter.

8. The apparatus of claim 1, wherein the donor sheet comprises a transfer layer and a layer adjacent to the transfer layer which comprises a photothermal converter.

9. The apparatus of claim 1, wherein the apparatus does not comprise pressure plates to press the donor sheet and the acceptor element into contact.

10. The apparatus of claim 1, wherein the apparatus comprises a projection area, and contact between the portion of the donor sheet and the portion of the acceptor element covers a substantial arcuate section comprising the projection area.

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11. The apparatus of claim 1, wherein the first and second contact rollers are spring loaded contact rollers.

12. An apparatus for providing substantially intimate rolling contact between a portion of a donor sheet and a portion of an acceptor element in a laser-induced thermal transfer printer comprising a laser imaging head, the apparatus comprising:

a rotatably mounted cylindrical drum;

an acceptor element affixed to and supported by the cylindrical drum;

a rotatably mounted dispensing roller for dispensing a donor sheet; and

a rotatably mounted receiving roller for receiving the donor sheet, the donor sheet being extended between the dispensing roller and the receiving roller, wherein the dispensing roller and the receiving roller are configured to bring a portion of the donor sheet extended between the dispensing roller and the receiving roller into contact with a portion of the acceptor element, wherein the laser imaging head does not contact the donor sheet and does not contact the acceptor element.

13. The apparatus of claim 12, wherein the acceptor element is affixed to the external surface of the cylindrical drum.

14. The apparatus of claim 13, wherein the cylindrical drum, dispensing roller and receiving roller rotate in a synchronous manner.

15. The apparatus of claim 13, wherein the laser-induced thermal transfer printer comprises a laser imaging head for providing scanning laser energy to transfer material

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from the donor sheet to the acceptor element to form a representation of an image on the acceptor element, and wherein the portion of the donor sheet brought into contact with the portion of the acceptor element is the portion of the donor sheet located proximate to the laser imaging head.

16. The apparatus of claim 12, wherein the apparatus does not comprise pressure plates to press the donor sheet and the acceptor element into contact.

17. The apparatus of claim 12, wherein the apparatus comprises a projection area, and contact between the portion of the donor sheet and the portion of the acceptor element covers a substantial arcuate section comprising the projection area.

18. A method for providing substantially intimate rolling contact between a portion of a donor sheet and a portion of an acceptor element in a laser-induced thermal transfer printer comprising a laser imaging head, comprising:

rotatably mounting a cylindrical drum;

affixing an acceptor element to the cylindrical drum so that the acceptor element is supported by the cylindrical drum;

rotatably mounting a dispensing roller for dispensing a donor sheet;

rotatably mounting a receiving roller for receiving the donor sheet, the donor sheet being configured to be extended between the dispensing roller and receiving roller; and

rotatably mounting a plurality of contact rollers configured to bring a portion of the donor sheet extended between the dispensing roller and receiving roller into contact with a

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portion of the acceptor element, wherein the laser imaging head does not contact the donor sheet and does not contact the acceptor element.

19. The method of claim 18, wherein the affixing of the acceptor element to the cylindrical drum comprises affixing the acceptor element to the external surface of the cylindrical drum.

20. The method of claim 19, wherein the mounting of the plurality of contact rollers comprises mounting a first contact roller in contact with the cylindrical drum and a second contact roller in contact with the cylindrical drum, wherein the portion of the donor sheet brought into contact with the portion of the acceptor element is configured to be the portion of the donor sheet located between the first contact roller and second contact roller.

21. The method of claim 20, wherein the mounting of the plurality of contact rollers comprises mounting the first contact roller proximate to the dispensing roller and mounting the second contact roller proximate to the receiving roller.

22. The method of claim 20, comprising rotating the cylindrical drum, dispensing roller, receiving roller and contact rollers in a synchronous manner.

23. The method of claim 20, wherein the laser-induced thermal transfer printer comprises a laser imaging head for providing scanning laser energy to transfer material from the donor sheet to the acceptor element to form a representation of an image on the acceptor element, and wherein the portion of the donor sheet brought into contact with the portion of the

acceptor element is configured to be the portion of the donor sheet located generally proximate to the laser imaging head.

24. The method of claim 18, wherein the donor sheet comprises a transfer layer comprising a photothermal converter.

25. The method of claim 18, wherein the donor sheet comprises a transfer layer and a layer adjacent to the transfer layer which comprises a photothermal converter.

26. The method of claim 18, wherein the method does not comprise providing pressure plates to press the donor sheet and the acceptor element into contact.

27. The method of claim 18, wherein the laser-induced thermal transfer printer comprises a projection area, and contact between the portion of the donor sheet and the portion of the acceptor element covers a substantial arcuate section comprising the projection area.

28. The method of claim 18, wherein the first and second contact rollers are spring loaded contact rollers.

29. A method for providing substantially intimate rolling contact between a portion of a donor sheet and a portion of an acceptor element in a laser-induced thermal transfer printer comprising a laser imaging head, comprising:

rotatably mounting a cylindrical drum;

affixing an acceptor element to the cylindrical drum so that the acceptor element is supported by the cylindrical drum;

rotatably mounting a dispensing roller for dispensing a donor sheet; and

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rotatably mounting a receiving roller for receiving the donor sheet, the donor sheet being configured to be extended between the dispensing roller and the receiving roller, the dispensing roller and receiving roller being configured to bring a portion of the donor sheet extended between the dispensing roller and the receiving roller into contact with a portion of the acceptor element, wherein the laser imaging head does not contact the donor sheet and does not contact the acceptor element.

30. The method of claim 29, wherein the acceptor element is affixed to the external surface of the cylindrical drum.

31. The method of claim 30, comprising rotating the cylindrical drum, dispensing roller and receiving roller in a synchronous manner.

32. The method of claim 30, wherein the laser-induced thermal transfer printer comprises a laser imaging head for providing scanning laser energy to transfer material from the donor sheet to the acceptor element to form a representation of an image on the acceptor element, and wherein the portion of said donor sheet brought into contact with the portion of the acceptor element is configured to be the portion of the donor sheet located proximate to the laser imaging head.

33. The method of claim 29, wherein the donor sheet comprises a transfer layer comprising a photothermal converter.

34. The method of claim 29, wherein the donor sheet comprises a transfer layer and a layer adjacent to the transfer layer which comprises a photothermal converter.

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35. The method of claim 29, wherein the method does not comprise providing pressure plates to press the donor sheet and the acceptor element into contact.

36. The method of claim 29, wherein the laser-induced thermal transfer printer comprises a projection area, and contact between the portion of the donor sheet and the portion of the acceptor element covers a substantial arcuate section comprising the projection area.

37. A method for transferring material between a portion of a donor sheet and a portion of an acceptor element in a laser-induced thermal transfer printer, wherein the donor sheet and the acceptor element define contact points and non-contact areas, the method comprising:

rotatably mounting a cylindrical drum;

affixing an acceptor element to the cylindrical drum so that the acceptor element is supported by the cylindrical drum;

rotatably mounting a dispensing roller for dispensing a donor sheet;

rotatably mounting a receiving roller for receiving the donor sheet, the donor sheet being configured to be extended between the dispensing roller and receiving roller; and

rotatably mounting a plurality of contact rollers configured to bring a portion of the donor sheet extended between the dispensing roller and receiving roller into contact with a portion of the acceptor element,

wherein material is transferred across the contact points and across the non-contact areas.



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38. A method for transferring material between a portion of a donor sheet and a portion of an acceptor element in a laser-induced thermal transfer printer, wherein the donor sheet and the acceptor element define contact points and non-contact areas, comprising:

rotatably mounting a cylindrical drum;

affixing an acceptor element to the cylindrical drum so that the acceptor element is supported by the cylindrical drum;

rotatably mounting a dispensing roller for dispensing a donor sheet; and

rotatably mounting a receiving roller for receiving the donor sheet, the donor sheet being configured to be extended between the dispensing roller and the receiving roller, the dispensing roller and receiving roller being configured to bring a portion of the donor sheet extended between the dispensing roller and the receiving roller into contact with a portion of the acceptor element,

wherein material is transferred across the contact points and across the non-contact areas.

39. An apparatus for providing substantially intimate rolling contact between a portion of a donor sheet and a portion of an acceptor element in a laser-induced thermal transfer printer, the apparatus comprising a plurality of units, each unit comprising:

a laser imaging head;

a rotatably mounted cylindrical drum;

an acceptor element affixed to and supported by a curved section of the cylindrical drum;

a rotatably mounted dispensing roller for dispensing a donor sheet;

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a rotatably mounted receiving roller for receiving the donor sheet, the donor sheet being extended between the dispensing roller and the receiving roller; and

a plurality of rotatably mounted contact rollers configured to bring a portion of the donor sheet extended between the dispensing roller and the receiving roller into contact with a portion of the acceptor element, wherein the laser imaging head does not contact the donor sheet and does not contact the acceptor element, wherein the plurality of units comprises pairs of units comprising a first unit and a second unit, wherein the acceptor element is extended between a contact roller on the first unit and a free-rotating transfer drum, and wherein the acceptor element is extended between the free-rotating transfer drum and a contact roller on the second unit.

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